

REMARKS

The title has been objected to as allegedly not descriptive. The title has been amended to address the Examiner's concerns.

Claims 1-35 are pending. Claims 1, 17, and 25 are the independent claims. Claim 35 is new.

Independent claims 1, 17, and 25 stand rejected as allegedly obvious over Sommargren (US Patent No. 4,594,003) in view of Gerchman (Gerchman, M. and Hunter, G., "Differential technique for accurately measuring the radius of curvature of long radius concave optical surfaces," Proc. SPIE Vol. 192 (1979)).

Independent claim 1 recites an interferometric system that includes "a system controller ... programmed to cause [a] tunable radiant energy source to scan [a] characteristic wavelength over [a] range of wavelengths while concurrently monitoring [an] optical interference pattern via [a] detecting system and further programmed to calculate [a] radius of curvature of a surface of [a] measurement object from the monitored optical interference pattern." Neither Sommargren nor Gerchman, nor the combination of the two, discloses or suggests the interferometric system recited in claim 1.

Sommargren relates to an phase interferometer for measuring the distortion of a test object. Col. 1:7-14. However, Sommargren does not disclose or suggest an interferometer that is used to calculate the radius of curvature of a test object. In fact, Sommargren never even uses the words "radius" or "radii" in his specification. Thus, Sommargren does not disclose or suggest a system controller that is programmed to calculate a radius of curvature.

Gerchman relates to an interferometer for measuring the radius of curvature of a test object. However, Gerchman does not disclose calculating a radius of curvature from a wavelength tuned interference pattern. An interference signal is observed while the distance between the test object and a reference object is varied mechanically and successive null positions of the interferometer are observed. The radius of curvature is determined from the distance between successive null positions. Gerchman at 75. See also Table 2 at p. 78 (showing that the radius of curvature is calculated from successive null positions z_i and z_{i+1}). For such a

method to work properly, the wavelength of light used to create the interference signal should not vary while the interferometer is mechanically shifted, and Gerchman's method would actually suffer from a deliberate wavelength tuning. Thus, Gerchman does not disclose or suggest a controller programmed to scan the wavelength of a tunable radiant energy source, while monitoring an interference pattern, and programmed to calculate the radius of curvature from the interference pattern.

Even if a motivation existed to combine Gerchman with Sommargren – and we contend there is no such motivation - the combination of the two references would not disclose the limitations claim 1. Sommargren discloses the use of a wavelength-tuned Fizeau cavity interferometer but does not disclose a method or apparatus for calculating a radius of curvature. While Gerchman discloses calculating a radius of curvature by mechanically shifting a component of a Fizeau cavity interferometer, Gerchman keeps the wavelength fixed when calculating a radius of curvature. Importantly, Gerchman does not disclose or suggest calculating a radius of curvature from a wavelength-tuned interference pattern. Thus, simply replacing the interferometer of Sommargren with the interferometer of Gerchman, as proposed by the Examiner, would not disclose or suggest the invention recited in claim 1.

With respect to independent claim 17, we again submit that the cited art fails to disclose “a wavelength change monitor configured to monitor a change in the characteristic wavelength of the radiant energy beam.”. Indeed, the current Action is silent as to where it finds any such monitor in Sommargren and/or Gerchman (see pages 3 and 4 of current Action). To the contrary, the Examiner previously indicated that the claimed wavelength change monitor is not disclosed in Sommargren or Gerchman by stating that dependent claim 10, which recites a wavelength change monitor, would be allowable over Sommargren and Gerchman if rewritten in independent form. See page 4 of July 30, 2003, Action. See also, Reasons for Allowability at page 4 of the July 30, 2003, Action. The claimed wavelength change monitor also is not disclosed in Gerchman because Gerchman relates to an interferometer in which the wavelength of light is constant, and thus there is no change in wavelength to monitor. Accordingly, we

respectfully ask that the Examiner withdraw the rejection or state his rejection with adequate particularity, so that we may reply to it in more detail.


With respect to claim 25, we assert that neither Sommargren nor Gerchman, nor the combination of the two discloses "determining a relative change in [a] characteristic wavelength." The Examiner has not cited any portion of either Sommargren or Gerchman that discloses such a determining step. Indeed, the Examiner previously found claim 25 allowable over Sommargren and Gerchman for at least this very reason (see Reasons for Allowability at page 4 of the July 30, 2003, Action), however the Examiner has not provided any new reasoning or references in the present Action to explain where the limitations of claim 25 are allegedly found in the cited art. Accordingly, we respectfully ask that the Examiner withdraw the rejection or state his rejection with adequate particularity, so that we may reply to it in more detail.

Claims 2-16 depend from claim 1, claims 18-24 depend from claim 17, and claim 26-35 depend from claim 25, and are allowable at least for the reasons stated above.

Enclosed is a \$18 check for excess claim fees. No additional fees are believed to be due at this time. Please apply any other charges or credits to deposit account 06-1050 referencing Attorney Docket No. 09712-099001 / Z-204.

Respectfully submitted,

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